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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,244	07/08/2003	Nobuhiro Miki	21776-00052-US	6222

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EXAMINER
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OSELE, MARK A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/614,244

Applicant(s)

MIKI ET AL.

Examiner

Mark A. Osele

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1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 20-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 20-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/416,416.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>07082003</u> | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 and 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,778,536 (Grebinski). Grebinski shows an apparatus for removing a resist film comprising: means for bringing superheated steam into contact with resist film; means for spraying steam onto the resist film; means for mixing an ingredient for promoting a change in quality of the resist film into the steam, and means for switching the supply from steam alone to steam with an additive to inert gas (column 2, lines 50-64; column 3, lines 24-38; column 4, line 64 to column 5, line 2). Regarding claims 2 and 4, the steam is at a temperature range including 100°C (column 4, lines 4-6).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,778,536 (Grebinski). As shown in paragraph 2 above, Grebinski

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shows an apparatus including a chamber and devices for injecting steam with or without an additive onto a wafer with resist on a surface. Grebinski fails to disclose the systems for creating the steam, but one of ordinary skill in the art would realize that subsystems for heating steam, controlling the amount of heat and quantity of steam, and a subsystem for controlling the pressure of the steam would all be required for supplying steam that would have its intended effect without damaging the substrate being cleaned. (See also Kunze-Concewicz, column 4, lines 25-49). Regarding claim 12, water drains are conventionally provided with a filter, such as that in a sink, to ensure that a drain pipe does not become clogged.

5. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,778,536 (Grebinski) in view of Franca et al. or Vig et al. As shown in paragraphs 2 and 4 above, Grebinski shows an apparatus including a chamber and devices for injecting steam with or without an additive onto a wafer with resist on a surface but fails to suggest using an ultraviolet lamp. Franca (column 1, lines 33-34) and Vig et al. (column 1, lines 12-22) each teach that processes using ultraviolet light are well known in the semiconductor art to decompose and remove contaminants, including organic contaminants such as resist films. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the ultraviolet lamp of Franca et al. or Vig et al. into the apparatus of Grebinski to increase the efficiency of the steam stripping device. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select an ultraviolet lamp having a

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wavelength within the claimed range because ultraviolet wavelength is a result effective variable chosen for its effectiveness.

6. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,778,536 (Grebinski) in view of Kunze-Concewicz. As shown in paragraphs 2 above, Grebinski shows an apparatus including a chamber and devices for injecting steam with or without an additive onto a wafer with resist on a surface but fails to suggest a system for moving a steam nozzle to move it relative to the substrate surface. Kunze-Concewicz teaches that a steam nozzle for cleaning the surface of a wafer can be moved relative to the surface of the wafer to sweep the steam over the surface (column 6, lines 52-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add means to move the steam nozzle of Grebinski because Kunze-Concewicz shows this movement to be used in a wafer cleaning device so the entire surface can be acted upon.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase, "a wavelength corresponding to a transmissive distance of not less than 10 mm to steam" is unclear.

***Claim Objections***

9. Claims 1, 6, and 23 objected to because of the following informalities: Claim 1, line 3, 'bringing' is misspelled; Claim 6, line 4, 'steam' is misspelled; Claim 24 does not end with a period. Appropriate correction is required.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanaka et al., Ohno et al., and Agarwala et al. each show chambers for supplying steam or a cryogen to a substrate to clean it.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark A. Osele whose telephone number is 571-272-1235. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**MARK A. OSELE**  
**PRIMARY EXAMINER**

October 2, 2005